

CLAIMS

We claim:

1 1. A method for determining if a server should be assigned to a
2 server pool for a work type in a work processing facility, the server pool
3 configured to retain an indication of servers that process work of the work type,
4 comprising:

5 determining if a server's first value for the work type is less than a
6 server's second value for the work type, wherein the first value indicates the
7 server's positive indicator for the work type and the second value indicates the
8 server's negative indicator for the work type;

9 determining a composite preference value for the work type if the
10 server's first value for the work type is less than the server's second value for the
11 work type;

12 determining if the determined composite preference value for the
13 work type is greater than the server's second value for the work type; and

14 sending an indication to the work processing facility that the server
15 is suitable for assignment to the server pool for the work type if the composite
16 preference value for the work type is greater than the server's second value for
17 the work type.

1 2. The method of claim 1 wherein determining the composite
2 preference value comprises:

3 determining a dynamic preference value for the work type, wherein
4 the determined dynamic preference value reflects a measurement of the work
5 processing facility's need to have servers perform work of the work type;

6 accessing a user-selectable composite preference value function
7 that is configured to determine a composite preference value; and

8 providing the server's determined preference value for the work
9 type and the determined dynamic preference value for the work type to the

10 accessed user-selectable composite preference value function to generate the
11 composite preference value for the work type.

1 3. The method of claim 2 wherein the accessed user-selectable
2 composite preference value function comprises:
3 adding the server's determined preference value for the work type
4 to the determined dynamic preference value for the work type.

1 4. The method of claim 2 wherein the accessed user-selectable
2 composite preference value function comprises:
3 multiplying the server's determined preference value for the work
4 type by a first scaling factor to produce a scaled server first value;
5 multiplying the dynamic preference value for the work type by a
6 second scaling factor to produce a scaled dynamic preference value; and
7 adding the scaled server first value to the scaled dynamic
8 preference value to produce the composite preference value.

1 5. The method of claim 4 wherein one of the first scaling factor
2 and the second scaling factor is unity.

1 6. The method of claim 4 wherein the first scaling factor equals
2 the second scaling factor.

1 7. The method of claim 2 wherein the determined dynamic
2 preference value for the work type is determined from at least one of a service
3 level value for the work type, a queue condition for the work type, an alarm
4 condition for the work type, an answer delay for the work type, a desired service
5 level for the work type, a call abandonment rate for the work type, and an
6 operator intervention value for the work type.

1 8. The method of claim 2 wherein the server is at least one of a
2 human agent or a robotic agent and wherein the accessed composite preference
3 value function is further configured to generate the composite preference value
4 using data associated with at least one of a human agent or a robotic agent.

1 9. The method of claim 1, further including not assigning the
2 server to the server pool of the work type if the server's first value is less than the
3 server's second value unless the composite preference value for the work type is
4 greater than the server's second value for the work type.

1 10. The method of claim 1 wherein the server's first value for
2 the work type and the server's second value for the work type are retained in a
3 table and wherein determining if the server's first value for the work type is less
4 than the server's second value for the work type further comprises examining the
5 table to retrieve the server's first value and the server's second value.

1 11. The method of claim 1, further including not determining
2 the composite preference value if the server's first value for the work type is
3 greater than or equal to the server's second value.

1 12. The method of claim 1, further including the work
2 processing facility receiving the indication and assigning the server to the server
3 pool of the work type as a back-up server.

1 13. The method of claim 1, further comprising:
2 re-determining the composite preference value for the work type;
3 determining if the re-determined composite preference value for the
4 work type is greater than the server's second value; and
5 sending another indication to the work processing facility that the
6 server should be removed from the server pool for the work type if the re-

7 determined composite preference value for the work type is less than the server's
8 second value.

1 14. The method of claim 1 wherein determining if the server's
2 first value exceeds the server's second value is determined a plurality of times,
3 the method further comprising:

4 examining an evaluation parameter to determine if the
5 determination of whether the server's first value exceeds the server's second
6 value should be determined for another time of the plurality of times.

1 15. The method of claim 1 wherein the work processing facility
2 has a plurality of server pools for a plurality of work types and wherein a
3 composite preference value is determined for each work type of the plurality of
4 work types if the server's first value for that work type is less than the server's
5 second value for that work type.

1 16. A method for determining if a server should be assigned to
2 at least one server pool of a plurality of server pools in a work processing facility
3 that processes work for a plurality of work types, each server pool configured to
4 retain an indication of servers that process work of a respective work type of the
5 plurality of work types, comprising:

6 for at least one work type of the plurality of work types:

7 determining if the server's first value for the work type is
8 less than the server's second value for the work type, wherein the first value
9 indicates the server's positive indicator for the work type and the second value
10 indicates the server's negative indicator for the work type;

11 determining a composite preference value for the work type
12 if the server's first value for the work type is less than the server's second value
13 for the work type;

14 determining if the determined composite preference value
15 for the work type is greater than the server's second value for the work type; and

16 sending an indication to the work processing facility that the
17 server is suitable for assignment to the server pool for the work type if the
18 composite preference value for the work type is greater than the server's second
19 value for the work type.

1 17. The method of claim 16, further comprising:
2 determining for which server pools the server has been assigned,
3 wherein determining if the server's first value for the work type is less than the
4 server's second value for the work type is performed only if the server is not
5 assigned to the server pool for the work type.

1 18. The method of claim 16 wherein determining if the server's
2 first value for the work type is less than the server's second value for the work
3 type is performed for all work types of the plurality of work types for which the
4 server has not been assigned to the respective server pool for the work type.

1 19. The method of claim 16 wherein determining the composite
2 preference value comprises:
3 determining a dynamic preference value for the work type, wherein
4 the determined dynamic preference value reflects a measurement of the work
5 processing facility's need to have servers perform work of the work type;
6 accessing a user-selectable composite preference value function
7 that is configured to determine a composite preference value; and
8 providing the server's determined first value for the work type and
9 the determined dynamic preference value for the work type to the accessed user-
10 selectable composite preference value function to generate the composite
11 preference value for the work type.

1 20. The method of claim 19 wherein the accessed user-
2 selectable composite preference value function comprises:
3 adding the server's determined first value for the work type to the
4 determined dynamic preference value for the work type.

1 21. The method of claim 19 wherein the accessed user-
2 selectable composite preference value function comprises:
3 multiplying the server's determined first value for the work type by
4 a first scaling factor to produce a scaled server first value;
5 multiplying the dynamic preference value for the work type by a
6 second scaling factor to produce a scaled dynamic preference value; and
7 adding the scaled server first value to the scaled dynamic
8 preference value to produce the composite preference value.

1 22. A method for determining in a call center if an agent should
2 be assigned to an agent pool for a work type processed by the call center, the
3 agent pool configured to retain an indication of agents that process work of the
4 work type, comprising:
5 determining if an agent's first value for the work type is less than
6 an agent's second value for the work type, wherein the first value indicates the
7 agent's positive indicator for the work type and the second value indicates the
8 agent's negative indicator for the work type;
9 determining a composite preference value for the work type if the
10 agent's first value for the work type is less than the agent's second value for the
11 work type;
12 determining if the determined composite preference value for the
13 work type is greater than the agent's second value for the work type; and
14 sending an indication to a work distributor in the call center that the
15 agent is suitable for assignment to the agent pool for the work type if the

16 composite preference value for the work type is greater than the agent's second
17 value for the work type.

1 23. The method of claim 22 wherein determining the composite
2 preference value comprises:
3 determining a dynamic preference value for the work type, wherein
4 the determined dynamic preference value reflects a measurement of the call
5 center's need to have agents perform work of the work type;
6 accessing a user-selectable composite preference value function
7 that is configured to determine a composite preference value; and
8 providing the agent's determined first value for the work type and
9 the determined dynamic preference value for the work type to the accessed user-
10 selectable composite preference value function to generate the composite
11 preference value for the work type.

1 24. The method of claim 23 wherein the accessed user-
2 selectable composite preference value function comprises:
3 adding the agent's determined first value for the work type to the
4 determined dynamic preference value for the work type.

1 25. The method of claim 23 wherein the accessed user-
2 selectable composite preference value function comprises:
3 multiplying the agent's determined first value for the work type by
4 a first scaling factor to produce a scaled agent first value;
5 multiplying the dynamic preference value for the work type by a
6 second scaling factor to produce a scaled dynamic preference value; and
7 adding the scaled agent first value to the scaled dynamic preference
8 value to produce the composite preference value.

1 26. The method of claim 25 wherein one of the first scaling
2 factor and the second scaling factor is unity.

1 27. The method of claim 25 wherein the first scaling factor
2 equals the second scaling factor.

1 28. The method of claim 23 wherein the determined dynamic
2 preference value for the work type is determined from at least one of a service
3 level value for the work type, a queue condition for the work type, an alarm
4 condition for the work type, an answer delay for the work type, a desired service
5 level for the work type, a call abandonment rate for the work type, and an
6 operator intervention value for the work type.

1 29. The method of claim 23 wherein the agent is at least one of
2 a human agent or a robotic agent and wherein the accessed composite preference
3 value function is further configured to generate the composite preference value
4 using data associated with at least one of a human agent or a robotic agent.

1 30. The method of claim 22 wherein the agent's first value for
2 the work type and the agent's second value for the work type are retained in a
3 table and wherein determining if the agent's first value for the work type is less
4 than the agent's second value for the work type further comprises examining the
5 table to retrieve the agent's first value and the agent's second value.

1 31. The method of claim 22, further including the work
2 distributor receiving the indication and assigning the agent to the agent pool of
3 the work type as a back-up agent.

1 32. The method of claim 22, further comprising:
2 re-determining the composite preference value for the work type;

3 determining if the re-determined composite preference value for the
4 work type is greater than the agent's second value; and

5 sending another indication to the work distributor that the agent
6 should be removed from the agent pool for the work type if the re-determined
7 composite preference value for the work type is less than the agent's second
8 value.

1 33. The method of claim 22 wherein the call center has a
2 plurality of agent pools for a plurality of work types, and wherein:

3 a composite preference value is determined for each work type of
4 the plurality of work types if the agent's first value for that work type is less than
5 the agent's second value for that work type.

1 34. A method for determining in a work distributor if a server
2 should be assigned to a server pool for a work type to which the work distributor
3 assigns servers, the server pool configured to retain an indication of servers that
4 process work of the work type, comprising:

5 determining if a server's first value for the work type is less than
6 the server's second value for the work type, wherein the first value indicates the
7 server's positive indicator for the work type and the second value indicates the
8 server's negative indicator for the work type;

9 determining a composite preference value for the work type if the
10 server's first value for the work type is less than the server's second value for the
11 work type;

12 determining if the determined composite preference value for the
13 work type is greater than the server's second value for the work type; and

14 assigning the server to the server pool for the work type if the
15 composite preference value for the work type is greater than the server's second
16 value for the work type.

1 35. The method of claim 34 wherein determining the composite
2 preference value comprises:

3 determining a dynamic preference value for the work type, wherein
4 the determined dynamic preference value reflects a measurement of a work
5 processing facility's need to have servers perform work of the work type;

6 accessing a user-selectable composite preference value function
7 that is configured to determine a composite preference value; and

8 providing the server's determined preference value for the work
9 type and the determined dynamic preference value for the work type to the
10 accessed user-selectable composite preference value function to generate the
11 composite preference value for the work type.

1 36. The method of claim 35 wherein the accessed user-
2 selectable composite preference value function comprises:

3 adding the server's determined preference value for the work type
4 to the determined dynamic preference value for the work type.

1 37. The method of claim 35 wherein the accessed user-
2 selectable composite preference value function comprises:

3 multiplying the server's determined preference value for the work
4 type by a first scaling factor to produce a scaled server first value;

5 multiplying the dynamic preference value for the work type by a
6 second scaling factor to produce a scaled dynamic preference value; and

7 adding the scaled server first value to the scaled dynamic
8 preference value to produce the composite preference value.

1 38. The method of claim 37 wherein one of the first scaling
2 factor and the second scaling factor is unity.

1 39. The method of claim 37 wherein the first scaling factor
2 equals the second scaling factor.

1 40. The method of claim 35 wherein the determined dynamic
2 preference value for the work type is determined from at least one of a service
3 level value for the work type, a queue condition for the work type, an alarm
4 condition for the work type, an answer delay for the work type, a desired service
5 level for the work type, a call abandonment rate for the work type, and an
6 operator intervention value for the work type.

1 41. The method of claim 35 wherein the server is at least one of
2 a human agent or a robotic agent and wherein the accessed composite preference
3 value function is further configured to generate the composite preference value
4 using data associated with at least one of a human agent or a robotic agent.

1 42. The method of claim 34 wherein the server is not assigned
2 to the server pool of the work type if the server's first value is less than the
3 server's second value unless the composite preference value for the work type is
4 greater than the server's second value for the work type.

1 43. The method of claim 34 wherein the server's first value for
2 the work type and the server's second value for the work type are retained in a
3 table and wherein determining if the server's first value for the work type is less
4 than the server's second value for the work type further comprises examining the
5 table to retrieve the server's first value and the server's second value.

1 44. The method of claim 34 wherein the assigned server is
2 designated as a back-up server in the server pool and wherein back-up servers in
3 the server pool are configured for removal from the server pool by the work
4 distributor.

1 45. A computer-readable medium whose contents cause a
2 computer system to determine if a server should be assigned to a server pool for a
3 work type in a work processing facility, the server pool configured to retain an
4 indication of servers that process work of the work type, by performing the steps
5 of:

6 determining if a server's first value for the work type is less than a
7 server's second value for the work type, wherein the first value indicates the
8 server's positive indicator for the work type and the second value indicates the
9 server's negative indicator for the work type;

10 determining a composite preference value for the work type if the
11 server's first value for the work type is less than the server's second value for the
12 work type;

13 determining if the determined composite preference value for the
14 work type is greater than the server's second value for the work type; and

15 sending an indication to the work processing facility that the server
16 is suitable for assignment to the server pool for the work type if the composite
17 preference value for the work type is greater than the server's second value for
18 the work type.

1 46. The computer-readable medium of claim 45 wherein
2 determining the composite preference value comprises:

3 determining a dynamic preference value for the work type, wherein
4 the determined dynamic preference value reflects a measurement of the work
5 processing facility's need to have servers perform work of the work type;

6 accessing a user-selectable composite preference value function
7 that is configured to determine a composite preference value; and

8 providing the server's determined preference value for the work
9 type and the determined dynamic preference value for the work type to the

10 accessed user-selectable composite preference value function to generate the
11 composite preference value for the work type.

1 47. The computer-readable medium of claim 46 wherein the
2 accessed user-selectable composite preference value function comprises:
3 adding the server's determined preference value for the work type
4 to the determined dynamic preference value for the work type.

1 48. The computer-readable medium of claim 46 wherein the
2 accessed user-selectable composite preference value function comprises:
3 multiplying the server's determined first value for the work type by
4 a first scaling factor to produce a scaled server first value;
5 multiplying the dynamic preference value for the work type by a
6 second scaling factor to produce a scaled dynamic preference value; and
7 adding the scaled server first value to the scaled dynamic
8 preference value to produce the composite preference value.

1 49. The computer-readable medium of claim 46 wherein the
2 determined dynamic preference value for the work type is determined from at
3 least one of a service level value for the work type, a queue condition for the
4 work type, an alarm condition for the work type, an answer delay for the work
5 type, a desired service level for the work type, a call abandonment rate for the
6 work type, and an operator intervention value for the work type.

1 50. The computer-readable medium of claim 45, further
2 comprising:
3 re-determining the composite preference value for the work type;
4 determining if the re-determined composite preference value for the
5 work type is greater than the server's second value; and

6 sending another indication to the work processing facility that the
7 server should be removed from the server pool for the work type if the re-
8 determined composite preference value for the work type is less than the server's
9 second value.

1 51. The computer-readable medium of claim 45 wherein
2 determining if the server's first value exceeds the server's second value is
3 determined a plurality of times, the computer-readable medium further
4 comprising:

5 examining an evaluation parameter to determine if the
6 determination of whether the server's first value exceeds the server's second
7 value should be determined for another time of the plurality of times.

1 52. A system for determining if a server should be assigned to a
2 server pool for a work type in a work processing facility, the server pool
3 configured to retain an indication of servers that process work of the work type,
4 comprising:

5 a first comparator configured to determine if a server's first value
6 for the work type is less than the server's second value for the work type,
7 wherein the first value indicates the server's positive indicator for the work type
8 and the second value indicates the server's negative indicator for the work type;

9 a second comparator configured to determine a composite
10 preference value for the work type if the server's first value for the work type is
11 less than the server's second value for the work type;

12 a third comparator configured to determine if the determined
13 composite preference value for the work type is greater than the server's second
14 value for the work type; and

15 a result indicator configured to send an indication to the work
16 processing facility that the server is suitable for assignment to the server pool for

17 the work type if the composite preference value for the work type is greater than
18 the server's second value for the work type.

1 53. The system of claim 52 wherein the third comparator
2 comprises:

3 a determiner configured to determine a dynamic preference value
4 for the work type, wherein the dynamic preference value reflects a measurement
5 of the work processing facility's need to have servers perform work of the work
6 type.

1 54. The system of claim 53 wherein the third comparator further
2 includes:

3 a processor configured to provide the server's determined first
4 value for the work type and the determined dynamic preference value for the
5 work type to a user-selectable composite preference value function configured to
6 generate the composite preference value for the work type.

1 55. The system of claim 54 wherein the third comparator further
2 includes:

3 a function provider that provides the user-selectable composite
4 preference value function that is configured to generate the composite preference
5 value.

1 56. The system of claim 54 wherein the processor is configured
2 to perform the operations of a user-selectable composite preference value
3 function that adds the server's determined first value to the determined dynamic
4 preference value for the work type.

1 57. The system of claim 54 wherein the processor is configured
2 to perform the operations of a user-selectable composite preference value
3 function that multiplies the server's determined first value by a first scaling factor

4 to produce a scaled server first value, multiplies the dynamic preference value for
5 the work type by a second scaling factor to produce a scaled dynamic preference
6 value, and adds the scaled server first value to the scaled dynamic preference
7 value.

1 58. The system of claim 57 wherein one of the first scaling
2 factor and the second scaling factor is unity.

1 59. The system of claim 57 wherein the first scaling factor
2 equals the second scaling factor.

1 60. The system of claim 54 wherein the server is at least one of
2 a human agent or a robotic agent and wherein the processor in executing the user-
3 selectable composite value function is further configured to determine a
4 composite preference value using data associated with at least one of a human
5 agent or a robotic agent.

1 61. The system of claim 53 wherein the determiner is
2 configured to determine a dynamic preference value for the work type from at
3 least one of a service level value for the work type, a queue condition for the
4 work type, an alarm condition for the work type, an answer delay for the work
5 type, a desired service level for the work type, a call abandonment rate for the
6 work type, and an operator intervention value for the work type.

1 62. The system of claim 52 wherein the result indicator is
2 configured to indicate that the server should not be assigned to the server pool of
3 the work type if the server's preference value is less than the server's threshold
4 value unless the composite preference value for the work type is greater than the
5 server's threshold value for the work type.

1 63. The system of claim 52, further including a table retaining
2 the server's preference value for the work type and the server's threshold value
3 for the work type, and wherein the first comparator is further configured to
4 examine the table to retrieve the server's preference value and the server's
5 threshold value.

1 64. The system of claim 52 wherein the second comparator is
2 configured not to determine the composite preference value if the server's
3 preference value for the work type is greater than the server's threshold value.

1 65. The system of claim 52 wherein the second comparator is
2 configured to re-determine the composite preference value for the work type, the
3 system further comprising:

4 a fourth comparator that is configured to determine if the re-
5 determined composite preference value for the work type is greater than the
6 server's threshold value; and

7 a second result indicator that is configured to send another
8 indication to the work processing facility that the server should be removed from
9 the server pool for the work type if the re-determined composite preference value
10 for the work type is less than the server's threshold value.

1 66. The system of claim 52 wherein the first comparator is
2 configured to determine whether the server's preference value exceeds the
3 server's threshold value a plurality of times, the system further comprising:

4 a timer that examines an evaluation parameter to determine if the
5 determination of whether the server's preference value exceeds the server's
6 threshold value should be re-determined for another time of the plurality of
7 times.

1 67. The system of claim 52 wherein the work processing facility
2 has a plurality of server pools for a plurality of work types and wherein the
3 second comparator is further configured to determine a composite preference
4 value for each work type of the plurality of work types if the server's preference
5 value for that work type is less than the server's threshold value for that work
6 type.

1 68. A computer memory containing server data usable for
2 assigning a server to a server pool for a work type in a work processing facility,
3 the data structure comprising an ordered series of entries each corresponding to
4 the server's positive indicator for the work type and the server's negative
5 indicator for the work type, a value of each entry in the ordered series indicating
6 the relative extent to which the server prefers to receive work for the work type
7 and to which the server prefers not to receive work for the work type, such that
8 the value of the entries may be used to assign the server to the server pool for the
9 work type.

1 69. The data structure of claim 68, further comprising an entry
2 corresponding to a composite preference value for the work type indicating the
3 relative extent to which the work processing facility's preference for the server
4 receiving work of the work type exceeds the server's negative indicator for not
5 receiving work for the work type.

1 70. The data structure of claim 69 wherein a value for the entry
2 corresponding to composite preference value for the work type equals a value for
3 the server's position for the work type and a value for a dynamic preference for
4 the work type that reflects the work processing facility's preference for having
5 the server perform the work type.

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